United States Department of Agriculture | Forest Service | Southwestern Region Forest Health Arizona Zone Office | 2500 S. Pine Knoll Drive Flagstaff, AZ 86001-6381 FAX (928) 556-2130 Voice (928) 556-2073

File Code: 3410
Date: January 23, 2003

Mr. John Martain
Regional Forester
Bureau of Indian Affairs
P.O. Box 1060
Gallup, NM 87305

Dear Mr. Martain:

Bobbe Fitzgibbon, Forest Entomologist, and Steve Dudley, Biological Technician, Forest Health Protection, USDA Forest Service, have completed our annual forest insect and disease aerial detection surveys. The Navajo Indian Reservation (IR) was surveyed the end of August 2002. We have met with A.K. Arbab, Navajo Forestry Dept., and provided GIS formatted maps showing this year's aerial survey results. We can also make available the electronic ARC/Info files of this year's survey.

A significant increase in bark beetle-killed ponderosa pine and piñon pine has occurred this summer throughout the state (see attached map). Drought is the primary catalyst behind this mortality. High tree density has also increased the susceptibility of pines to bark beetle attacks. Most of the mortality is occurring on dryer sites with thinner soils and in vegetation transition zones. Preliminary ground surveys indicate that there are two *Ips* and one *Dendroctonus* beetle species causing the majority of the mortality.

There was a fourfold increase of ponderosa pine mortality statewide in 2002, with over 2 million pines killed on approximately 500,000 acres (see attached table & map). Piñon pine mortality has also increased significantly this year. Because it would be cost-prohibitive to survey the vast acreage of all piñon-juniper woodland within the state of Arizona, our annual insect and disease aerial detection flights are largely confined to higher elevation forestland made up of ponderosa pine, mixed conifer, aspen, etc. Therefore, the majority of the piñon-juniper type is not aerially surveyed. To give some indication of impacts in the piñon type from bark beetles, within a 60,000-acre area just east of Flagstaff over 800,000 pines have been killed. A follow-up ground survey within this area indicates piñon pine mortality levels as high as 90 percent. There are certainly millions of dead piñon that were not detected during our aerial survey that we have since observed while traveling through many parts of the state, as well as on the Navajo IR.

This year's aerial detection surveys are a conservative estimate of both area affected and numbers of beetle-killed trees. Our observations are a snapshot in time, and trees have continued to be attacked and fade after our surveys. Because the bark beetles of concern have multiple generations per year and can grow exponentially as the season progresses, the largest flights and attack numbers possibly occurred during the later part of or after our aerial survey. This was in part confirmed during a recent re-flight of a portion of the Apache-Sitgreaves National Forest. The re-flight occurred approximately two months after the original aerial survey, and there was a

300 percent increase in the area affected and a 600 percent increase in the number of fading ponderosa pine.

Also detected this year was a significant increase in aspen defoliation, which is now labeled a "decline." This decline is rated in two categories, low and high. Affected areas in the low category have trees producing smaller leaves and/or premature leaf drop has occurred. High areas are marked by high mortality, especially of large trees. Although drought is considered a major factor, we believe this decline was initiated following a snowstorm hard-freeze event that occurred in June of 1999 across northern Arizona. Clones with immature elongating leaves were more susceptible to frost damage and were defoliated, while those with mature frost-resistant leaves were unaffected. Due to the prolonged drought, some clones have never recovered and continue to decline. Ground surveys of some of these areas reveal no sprouting.

Other plant communities also being impacted by drought include Manzanita, silk tassel and scrub oak. Some are severely drought-stressed and showing signs of mortality in a number of locations throughout the state.

Because the current beetle outbreak is occurring at the landscape scale and is largely a result of the ongoing drought, it is essentially impossible to control beetle population as a whole through management action. Therefore, control actions should be focused primarily on the most critical, high-value areas that have adequate accessibility. Our staff is available as forest health specialists to help address these forest health concerns and others that you may have.

Please feel free to contact this staff or myself with any questions regarding this survey, the results, or any future assistance you may need regarding forest health issues.

Sincerely,

/s/ John Anhold
JOHN ANHOLD
Arizona Zone Leader
Forest Health

cc: Leonard Lucero, Debra Allen-Reid, Bobbe Fitzgibbon, Steve Dudley, Joel McMillin

Alaxious Becenti (Navajo Forestry Dept), Arbab Amaullah, (Navajo Forestry Dept),